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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/605,265	09/18/2003	Donald G. Hill	560620	2264

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EXAMINER

RICHARD, CHARLES R

ART UNIT	PAPER NUMBER
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1712

DATE MAILED: 06/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/605,265

Applicant(s)

HILL, DONALD G.

Examiner

C. R. Richard

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☒ Claim(s) 1-4, 9-11 and 16-18 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1-5-2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: there are extraneous characters in paragraphs 6, 7, 8 and 27, as well as in several of the tables of the specification. Appropriate correction is required.

2. Applicant's Preliminary Amendment received January 5, 2004 is noted. Applicant has asked that paragraph 15 of the specification be replaced. It appears that Applicant is merely correcting an error in a patent number that is part of the background art. There does not seem to be any attempt to incorporate by reference or otherwise add new matter through this amendment, so it appears proper. However, Applicant has placed this paragraph and others describing the background art in the detailed description section of the specification. It would be best if Applicant moved these paragraphs to the background section under the circumstances.

3. Applicant may wish to clarify or appropriately amend the preferred range in paragraph 25 of the specification. It appears that the general range given is narrower than the preferred range.

Claim Objections

4. Claim 1 is objected to because, although it is apparent from the specification what Applicant intended, the words chosen in expressing the Markush group result in an easily avoidable uncertainty when read alone. The Markush group could be taken to

define the source of the reducing agent or the reducing agent itself, whereas from the specification, it is understood that the elements of the Markush group should be the reducing agents. In the interest of minimizing confusion by the public in future, appropriate correction is required.

5. Claims 2, 9 and 16 are objected to because they contain extraneous characters in the formulas. Appropriate correction is required.

6. Claims 3-4, 10-11 and 17-18 are objected to because, although it is apparent from the specification what Applicant intended, the words chosen result in an easily avoidable confusion when the claim is read alone. These claims recite "wherein the carbohyrazide is carbohydrazide wherein ..." or "wherein the semicarbohyrazide is semicarbohydrazide wherein ..."; this is confusing, because the hydrazide terms are being used specifically and generally in the same sentence. The distinction between say "a" carbohydrazide and carbohydrazide is understandable in the specification and can be easily made clear in the claims as well. For example, if one rewrote these claims along the lines of "the composition of claim X wherein R1 through R6 [R5] in the [semi] carbohydrazide each represent hydrogen", there would be no issue as to clarity (at least). The public would know exactly what Applicant meant when reading such a claim. Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 8 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by disclosures in EP0278540B1. This EP publication teaches compositions and methods for fluid loss control during acid fracturing that involve reversible cross linked(ing) of gelled acids (see page 2, lines 5-10).

EP0278540B1 teaches compositions and methods containing all the limitations of the rejected claims – aqueous acid, polymer, ferric salt, correct reducing agents and process steps (see page 2, line 44 to page 3, line 19). Specific reducing agents disclosed include hydrazine salts like the sulfate and hydroxylamine salts like the hydrochloride (see page 3, lines 15-20 as well as claims 8 and 13), which are sources of hydrazine and hydroxylamine, respectively. Note that fracture acidizing as disclosed is a form of acidizing where the pressure and flow rates are sufficient to cause formation fracture.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 1-4, 8-11 and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP0278540B1 in view of US Patent 3,779,914 to Nimerick and optionally, further in view of US Patent 3,238,226.

The EP document discloses a fracturing fluid containing an Fe³⁺ cross-linked polymer and fracturing methods as was discussed above. In addition, the EP document teaches that the reducing agent employed breaks the gel formed by reducing the Fe³⁺ to Fe²⁺ (see page 3, lines 44-55 of the EP document). As previously discussed, hydrazine and hydroxylamine salts are taught as possible reducing agents. There is no teaching as to carbohydrazides or semicarbohydrazides.

Nimerick teaches a fracturing fluid that includes a polymer and a hydrazine or hydroxylamine compound as a breaker (see Abstract). The polymer may be a crosslinked acrylamide among others (see column 4, lines 3-20). Possible hydrazine compounds taught include hydrazine salts like the sulfates and hydrochlorides as well as carbohydrazide (see column 3, lines 1-26). Possible hydroxylamine compounds

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include hydroxylamine salts like the sulfates and the hydrochloride (see column 3, lines 27-63).

Thus, Nimerick would have suggested to one of ordinary skill in the art at the time the present invention was made that carbohydrazide would be an acceptable substitute to a hydrazine salt as a breaker. Of course, carbohydrazide would hydrolyze in an acid solution (like that taught by the EP document) to produce hydrazine (see US Patent 3,238,226 for support for this statement). It would therefore have been obvious to one of ordinary skill in the art upon consideration of the teachings of the references cited to substitute carbohydrazide for the hydrazine salt in the compositions and methods of the EP document, thus producing compositions and methods within the scope of the rejected claims. The rejected claims are obvious.

11. Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over disclosures in EP0278540B1 in view of US Patent 5,362,408 to Pakulski et al. and US Patent 5,108,624 to Bossler et al. and optionally further in view of US Patents 3,238,226; 4,202,765 and 4,476,033.

The disclosures of the EP document have been discussed previously. All the limitations of the rejected claims in the proper context are disclosed in the EP document, except for the carbohydrazides, semicarbohydrazides, ketoximes and aldoximes. As discussed previously, the EP document teaches the use of hydrazine and hydroxylamine salts as reducing agents/breakers in acid fracturing fluids and corresponding methods.

Pakulski's invention relates to fracturing fluids. The reference discusses various oxygen scavengers (reducing agents) that may be similarly employed, and in particular hydroxylamine, its salts and alkyl derivatives, carbohydrazide (which is noted as being "a substitute for toxic hydrazine") and 2-butanoneoxime (see column 2, lines 5-17). There is also a discussion on the incompatibility of reducing agents and metal crosslinked gels, because of interaction of the metal and the reducing agent [the gels will be broken] (see column 2, lines 28-36). Oximes and 2-butanoneoxime (a ketoxime) in particular were found to work well in high temperature stabilization of fracturing fluids (see column 2, lines 65-68).

Bossler's teachings relate to use of reducing agents to deoxygenate (reduce) liquids (see Abstract). Reducing agents shown as equivalents are carbohydrazide, semicarbazide (same as semicarbohydrazide), hydroxylamine and salts, as well as certain alkyl hydrazines (see column 2, lines 12-20).

One of ordinary skill in the art, upon studying the disclosures presented here from the prior art would have concluded that carbohydrazides, semicarbohydrazides and oximes (in particular, 2-butanoneoxime, a ketoxime) would be acceptable substitutes for hydrazine and hydroxylamine as reducing agents, and it would have thus been obvious to make such substitutions. It may be helpful to note that carbohydrazides and semicarbohydrazides yield hydrazine and oximes yield hydroxylamine, respectively, upon hydrolysis in acid solution (see US Patents 3,238,226; 4,202,765 and 4,476,033 in the prior art that back up this statement), as is the composition of the EP document. In addition, it would be obvious to one of ordinary skill in the art to substitute an aldooxime

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for a ketoxime as reducing agent, given the similarity that both hydrolyse to hydroxylamine and that homologues with such similar structures would be expected to have similar properties and utility. The oximes (especially 2-butanoneoxime) have the added advantage of providing high temperature stabilization of gelled fracturing fluids also.

Therefore, one of ordinary skill in the art would have been sufficiently motivated and have found it obvious to use carbohydrazides, semicarbohydrazide, ketoximes (especially 2-butanoneoxime) or aldoximes as reducing agents in the compositions and corresponding methods of the EP document such that compositions and methods within the scope of the rejected claims would have been produced. The rejected claims are thus obvious.


Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent 3,818,991 to Nimerick and 6,348,436 to Langlois et al. have disclosures similar to some of the references used in the previous rejections. US Patents 3,238,226 to Riley et al., 4,202,765 to Koff et al. and 4,476,033 to Josephson were used to back up the Examiner's statements as to certain hydrolysis products. JP 6-322368 discloses a soil stabilizer similar to the compositions of the present invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to C. R. Richard whose telephone number is 571-272-8502. The examiner can normally be reached on M-F, 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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PRIMARY EXAMINER
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